

## Chapter 8

### 8. ASBESTOS

#### 8.1 GENERAL

This Chapter provides information and establishes procedures at LaRC for proper identification, management, and disposal of asbestos. The information is to be used in conjunction with the procedures contained in LAPG 1740.2, "Facility Safety Requirements," Chapter 4.5, "Facility and Structures Safety, Asbestos," and with Section 01060, Langley Safety and Environmental Requirements, Asbestos Operations.

Asbestos is a naturally occurring family of fibrous mineral silicates. Prior to 1980, asbestos materials were incorporated into a variety of building materials (asbestos containing building materials or ACBM) because they exhibit commercially desirable properties such as fire resistance, insulation against heat, cold, noise and electricity, high tensile strength and acid resistance. Examples of ACBM include:

Sprayed or troweled on surfacing material	Ceiling tile
Pipe insulation	Roofing felts
Textiles	Floor tile and mastic
Concrete-like materials	Caulking putty and spackle

Since the late 1970's, manufacture and distribution of many types of asbestos containing materials have either been banned or fallen under more stringent regulation.

ACBM can be divided into friable and non-friable categories. Friable materials can be crumbled, pulverized, or reduced to powder by hand pressure and are therefore more likely to release fibers when disturbed or damaged. Non-friable materials can also be a source of fiber release when cut, sanded or drilled.

The presence of asbestos in a building does not necessarily mean the health of the occupants is endangered. If asbestos-containing material remains in good condition and is unlikely to be disturbed, exposure will be negligible; however, when ACBM is damaged or disturbed, asbestos fibers can be released and present a potential health hazard to facility occupants.

LaRC does not remove or implement other abatement techniques simply because asbestos is present in a building. Removal or other abatement will be undertaken only if the condition of the asbestos is such that the health of facility occupants is jeopardized.

#### 8.2 REQUIREMENTS

##### 8.2.1 Regulations

Below is a brief description of agencies that regulate asbestos:

- The EPA regulates the emission of asbestos into the environment under three acts: the Clean Air Act (CAA), the Toxic Substances Control Act (TSCA), and the Federal Water Pollution Control Act (FWPCA).
- The Occupational Health and Safety Administration (OSHA) regulates the exposure of personnel to asbestos in general and construction industries involving renovation and demolition operations.

- The Commonwealth of Virginia Regulations parallel the Federal regulations but are more restrictive with regards to renovation notification requirements. State licensing of personnel involved with asbestos work (e.g. inspectors, abatement workers) is required for LaRC asbestos operations. Landfills that accept asbestos containing material must also be licensed by the State.

### **8.2.2 Asbestos Disposal**

Although not considered hazardous waste under RCRA, disposal of friable asbestos waste is regulated under 40 CFR 61, Subpart M. Disposal is permissible only in state licensed landfills. Transportation of open containers of asbestos waste is prohibited under Department of Transportation Regulations (49 CFR Parts 173.216 and 173.240).

### **8.2.3 Configuration Management On-Line (CMOL)**

Records of LaRC facilities that have friable ABCM are included in the Center's Configuration Management On-Line (CMOL) system, in the form of Asbestos Configuration Management Reports. The CMOL system is used by LaRC's Safety and Industrial Hygiene personnel, as well as FEC's and FSH's. Access to CMOL requires a user identification and password to obtain any documentation. The Asbestos Configuration Management Reports are used to document changes in ABCM condition, asbestos removal projects, and overall, to minimize exposure of facility occupants to asbestos. Additional information can be found in LAPG 1740.4, "Facility System Safety Analysis and Configuration Management."

### **8.2.4 Posting and Labeling**

Warning signs and labels are required to inform facility occupants of the presence of ABCM. Labeling and posting procedures can be found in OSHA's 29 CFR 1910.1101. Signs and labels are available from the LaRC Industrial Hygiene personnel at extension 43205.

## **8.3 RESPONSIBILITIES**

### **8.3.1 Office of Safety and Facility Assurance (OSFA)**

- Conduct inspections to identify ABCM and assess condition. Recommend remedial action as necessary; periodically re-inspect and reassess.
- Maintain ABCM location inventory and documentation in CMOL.
- Provide signs and labels to facility personnel.
- Approve Asbestos Safety Permits and contractor removal procedures.
- Monitor and inspect abatement operations as appropriate.

### **8.3.2 Environmental Management Office (EMO)**

- Review work requests involving asbestos removal and remediation.
- Arrange for asbestos disposal when appropriate.
- Review and sign asbestos manifests for both contractor and LaRC disposal.

### 8.3.3 Facility Safety Heads (FSH)

- Have access to the CMOL system if their facility has ACBM.
- Ensure asbestos materials/areas in their facilities are properly labeled and facility personnel are properly trained.
- Notify OSFA of changes to their facility's ACBM inventory or condition.

### 8.3.4 Facility and Equipment Support Services (FESS)

- Use the CMOL system to maintain/access LaRC's ACBM location inventory.
- Review work requests, facility renovation/demolition plans, and other projects for asbestos involvement. Refer to OSFA as appropriate.
- Prepare Asbestos Safety Permits for asbestos work and forward to OSFA.
- Notify OSFA and FSH's of changes of ACBM inventory and condition.

### 8.3.5 Asbestos Removal/Abatement Operations

In conjunction with the requirements of Section 01060, Langley Safety and Environmental Requirements, "Asbestos Operations," and LAPG 1740.2, Chapter 4.5, "Facility and Structures Safety, Asbestos," asbestos removal and/or abatement projects must follow the requirements listed below:

- Submit job-specific procedures to the EMO at Mail Stop 418 before starting work. No work may begin without prior approval from the EMO.
- Provide to the EMO the name and physical location of the disposal site. Only facilities approved by the State of Virginia may be used for asbestos disposal.
- Notify the appropriate regulatory agencies in accordance with 16VAC 25-20-30. Notification is required as follows:
  1. Twenty days prior to beginning work, notify the Virginia Department of Labor and Industry for operations that involve removal of 10 or more linear feet of friable thermal insulation or any other ACBM that becomes friable during handling
  2. Ten days prior to beginning work, notify the EPA for operations that involve the removal of 160 or more square feet of ACBM or 260 or more linear feet of ACBM.
- At least two days prior to shipment of asbestos off LaRC property, submit a completed asbestos waste manifest to the EMO at Mail Stop 418, Facility 1183, Room 110. (See example form at Figure 8-1.) The EMO will only sign complete manifests.

**NOTE:** Asbestos removed from LaRC removal/abatement sites remains Government property throughout the removal activity and should be processed as such on the Waste Shipment Manifest.

- Transport the asbestos material off site in accordance with 40 CFR 173.216.

- Dispose of the asbestos in accordance with 40 CFR 61, Subpart M and state regulations.

Figure 8-1

**EXAMPLE WASTE SHIPMENT MANIFEST**

<b>WASTE SHIPMENT RECORD</b>			
<b>BEFORE COMPLETING, CAREFULLY READ INSTRUCTIONS ON REVERSE</b>			
<b>Generator</b>	1. Work site name and mailing address    Work site: _____		Owner's Name
	NASA LaRC MS 418 Bldg. 1183 Hampton VA 23681		SAME
	2. Operator's Name and Address    REMOVAL CONTRACTOR NAME & ADDRESS		Phone No.
	3. Waste disposal site (WDS) name, mailing address, and physical site location    DISPOSAL SITE ADDRESS		WDS Phone No.
	4. Name and address of responsible agency COMMONWEALTH OF VA DEPT. OF AIR POLLUTION CONTROL P.O. BOX 10089 RICHMOND, VA 23240		
	5. Description of materials    RQ ASBESTOS, 9, NA2212 (FRIABLE ASBESTOS)    PGIII	6. Containers No.    Type	7. Total Quantity (yd <sup>3</sup> )
	IF Friable (enter required information in blocks 6 & 7)    →		→
	IF Non-Friable (check one): <input type="checkbox"/> Category I <input type="checkbox"/> Category II    →		→
	NOTE: Category I includes asphalt roofing products, resilient floor covering, packing, gaskets, BUT NOT TRANSITE. (See Instructions)		
	8. Special handling instructions and additional information IF SPILLED, CONTAIN IMMEDIATELY; MUST WEAR RESPIRATOR AND PROTECTIVE CLOTHING.		
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
Printed/typed name & title LaRC Environmental Management Office		Signature	Month    Day    Year
<b>Transporter</b>	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/typed name & title:		Signature
	Address:		Month    Day    Year
	Phone:		
<b>Disposal Site</b>	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/typed name & title		Signature
	Address and telephone no.		Month    Day    Year
	12. Discrepancy indication space		
13. Waste disposal site Owner or Operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item #12.			
Printed/typed name & title		Signature	Month    Day    Year
WHITE & BLUE - Transporter's Copy    GREEN - Disposal Facility Copy    YELLOW - Generator's Copy    PINK - Generator's Copy GOLDENROD - Generator's Copy (TO BE LEFT AT JOB SITE ON PICK-UP)			

**Chapter 9****9. ENVIRONMENTAL NOISE ABATEMENT****9.1 GENERAL**

Noise is unwanted sound. The loudness of a sound is measured in units called decibels (dB). Zero on the decibel scale represents the lowest limit of human audible perception of sound. The level of normal conversation is approximately 60 dB. Studies have shown that exposure to excessive and even moderate noise intensities for extended periods of time can cause irreparable damage to the human ear. Nationwide, as population has increased and become denser, noise levels have risen creating growing concerns for noise pollution and the need for abatement.

**9.2 REQUIREMENTS**

The goal of the Noise Control Act of 1972 is to protect all Americans from noise that jeopardizes their health and welfare. This legislation was designed to establish noise standards and to regulate noise emissions caused by commercial products such as transportation and construction equipment. The Act also specifies that Federal agencies should comply with Federal, state, and local requirements regarding the control and abatement of noise. Military weapons and combat-use equipment are exempt from regulation.

Many state and local governments have developed their own environmental noise regulations as a result of the Quiet Communities Act of 1978. This statute amended the Noise Control Act by providing state and local governments with funds to promote the development of noise control programs on a local level, as long as the actions at the local level are consistent with Federal regulations.

The Occupational Safety and Health Administration (OSHA) Noise Standards establish regulations and guidelines for workplace noise pollution. The OSHA standards are 90 dB measured for a duration of 8 hours, 95 dB for 4 hours, 100 dB for 2 hours, and 140 dB maximum for impulse noises.

**9.3 RESPONSIBILITIES**

All LaRC employees are responsible for seeing that noise levels are maintained at an acceptable level. The Center Noise Control and Hearing Conservation Program is defined in LAPG 2710.1, "Langley Research Center Noise Control and Hearing Conservation Program."

Concerns about environmental noise levels may be addressed to the EMO at extension 43500.

## Chapter 10

### 10. RECYCLING AND NON HAZARDOUS SOLID WASTE MANAGEMENT

#### 10.1 GENERAL

Recycling at LaRC is mandated by Executive Order (E.O.) 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition" and Virginia State House Bill 1757. Executive Order 13101 requires federal agencies to establish a goal for solid waste prevention and a goal for recycling or solid waste diversion. Goals include long-range goals to be achieved by the years 2005 and 2010. The agency set a solid waste diversion rate of 25 percent by 2005 and a 35 percent diversion rate by 2010. Commonwealth of Virginia House Bill 1757 mandates the City of Hampton to recycle at least 25 percent of the municipal solid waste produced within the City. LaRC, located within the City of Hampton, assists the City in meeting its recycling responsibility.

The LaRC recycling program began in 1991 with the collection of white and mixed paper, scrap metal, and toner cartridges. LaRC currently recycles white and mixed paper, cardboard, toner cartridges, used oil, batteries, fluorescent light bulbs, scrap metal, precious metal, antifreeze, and used tires. There is no formal aluminum can recycling program at LaRC; however, facility staff members collect aluminum cans for recycling on their own initiative.

The LaRC recycling information homepage is <http://osemant1.larc.nasa.gov/rapp/>. It keeps Center employees abreast of the recycling program. As recycling information changes or new items are collected, the web pages will be updated to reflect those changes.

To keep track of how the program is doing, the EMO keeps metrics on the quantity of materials collected and the funds recovered or cost to the Center. Funds collected from the sale of recycled goods are reinvested in the recycling program or used to support the pollution prevention program. Metrics for the Center's recycling programs are updated monthly on the recycling homepage.

#### 10.2 GOALS AND OBJECTIVES

LaRC is committed to reducing solid waste and hazardous waste from Center activities. Doing so is a joint effort between many organizations as well as Center employees. Training and outreach are vital elements to having a successful recycling program. The overall objective of LaRC's recycling program is to have a cost-effective recycling program that meets the following goals:

- Meet or exceed the recycling goals established by E.O. 13101.
- Maximize collection and recycling of recyclables.
- Maximize proceeds from selling the recyclables.
- Contribute to the preservation and conservation of the environment and its resources.

### **10.3 RESPONSIBILITIES**

As previously mentioned, LaRC is committed to reducing solid waste and hazardous waste from Center activities. Doing so is a joint effort between the EMO, the OLM, FEC's, and Center employees. Listed below are the responsibilities for each.

#### **10.3.1 Environmental Management Office (EMO)**

- Manage and oversee the Center's recycling program.
- Collect recyclable items in a timely manner throughout the Center.
- Prepare and mail monthly billing invoices to contractors.
- Act as the Center's official representative with government and private parties on recycling related matters.
- Track the Center's progress in meeting established recycling goals.
- Provide support, guidance, training, and assistance to Organizational Units in implementing the recycling program in order to meet or exceed established goals.
- Collect monthly metrics on the recycling program and make these available to Center personnel on the recycling webpage through the EMO homepage.
- Seek out new items to recycle and new commodity markets to maximize proceeds to LaRC from the sale of LaRC recyclable materials.

#### **10.3.2 Office of Logistics Management (OLM)**

- Provide day-to-day management of the collection of scrap metal, tires, precious metals and antifreeze.
- Remove scrap metal from facilities in a timely manner.
- Provide EMO with monthly detailed estimates of usage categories for each metal collected.
- Provide technical assistance to Center personnel.
- Receive training on LaRC's recycling procedures.
- Monitor recycling activities to ensure compliance with established recycling procedures.
- Provide copies of the scrap metal delivery order tickets to the EMO within three working days of each month.
- Maximize the collection of these recyclable materials and maximize the proceeds to LaRC from the sale of the recyclable materials.

#### **10.3.3 Facility Environmental Coordinators (FEC's)**

- Ensure facility personnel follow established procedures.



- Post copies of the relevant recycling procedures and updates in a prominent location and/or near recyclable material collection areas.
- Monitor recycling collection areas and arrange for pickup, if necessary. Ensure collection containers are not contaminated with non-recyclable materials.
- Educate facility employees about the recycling program or contact the EMO at extension 48058 to arrange for specific training.
- Inform the EMO of additional items that could be recycled or suggest improvements for the Center's recycling program.

#### 10.3.4 Center Employees and Contractors

- Participate in the LaRC recycling program.
- Keep abreast of the Center's recycling program information that is distributed by the FEC or on the EMO recycling homepage <http://osemant1.larc.nasa.gov/rapp/>.
- Ensure collection containers are not contaminated with non-recyclable materials.
- Inform the FEC or the EMO of additional items that could be recycled or improvements for the Center's recycling program.
- Attend facility training on LaRC's recycling procedures.

### 10.4 MANAGEMENT OF RECYCLABLE ITEMS

#### 10.4.1 White Paper

Collect white paper in the smaller blue containers provided by the EMO. When an individual container is full it must be emptied into the large **BLUE** container located at the facility's central collection area of your office or shop.

Central collection containers are emptied by the Environmental Support Contractor on a regular schedule or call-in basis, based on the building's generation rate (see website for schedule - <http://osemant1.larc.nasa.gov/rapp/>).

What is considered recyclable white paper?

#### ***RECYCLE THESE:***

Computer Paper  
White Letterhead  
White Typing Paper  
White Photocopy Paper  
Fax Paper  
White Memos  
White Paper with colored ink

#### ***DO NOT RECYCLE THESE:***

Food Wrappers or Cups  
Laser Print Labels  
Overheads  
Paper of any other color than white

Who do I contact for a paper pickup? Call the recycling office at extension 48058.

### 10.4.2 Mixed Paper

The EMO does not currently provide small green containers. Collect mixed paper in a labeled designated container. When a container is full it must be emptied into the large **GREEN** container located at the facility's central collection area.

Central collection containers are emptied by the Environmental Support Contractor on a regular schedule or on a call in basis, based on the building's generation rate (see website for schedule; <http://osemant1.larc.nasa.gov/rapp/>)

What is considered mixed paper?

***RECYCLE THESE:***

Colored Paper  
Glossy Paper  
Post-it Notes  
Manila Folders  
Catalogs and Magazines  
(stapled bindings only)

***DO NOT RECYCLE THESE:***

Food Wrappers or Cups  
Laser Print Labels  
Carbon Paper  
Overheads  
Catalogs and Magazines  
(glue bindings)

Who do I contact for a paper pickup? Call the recycling office at extension 48058.

### 10.4.3 Cardboard

- Large Generators

Large generators of cardboard are those facilities that generate large quantities of cardboard on a regular basis, either weekly or bi-weekly. These facilities have special collection bins to accommodate the larger volume of cardboard.

Large generators must break down the cardboard and place it in the large collection bin. Facility Environmental Coordinators (FEC's) can make arrangements for a facility to receive a large generator collection bin or establish regular pickups by calling extension 48058.

- Small Generators

Small or infrequent generators of cardboard are those facilities who occasionally have cardboard from supply or paper deliveries. Small generators must break down the cardboard and place it next to the recyclable paper collection bins. It will be picked up when paper is collected for recycling. See the paper pickup schedule on the recycling web page for more information.

- Special Cardboard Pickup

Special cardboard pickup can be arranged for your facility by calling the recycling office at extension 48058.

What is considered cardboard?

***RECYCLE THESE:***

Corrugated Cardboard  
(any color or thickness)

***DO NOT RECYCLE THESE:***

Paperboard (e.g., cereal boxes)

Cardboard with food contamination  
(e.g., pizza boxes)

#### **10.4.4 Toner Cartridges**

All toner cartridges are recyclable with the exception of Thermal Transfer Toner Cartridges. The Thermal Transfer Toner Cartridges should be sent to Property Disposal where they in turn will be sent to the burn center. All other toner cartridges are recyclable and must be placed inside the "bag" and the box that the new replacement cartridge came in. The box must be taped closed. Used toner cartridges shall be placed next to the paper bins at the facility's central collection area.

For facilities with weekly paper pickup, your cartridges will be picked up when the paper is collected. For facilities that are on an on-call basis for paper pickup, call the on-site recycling office at extension 48058 for a toner cartridge pickup. Allow three business days for cartridge pickup for on-call facilities.

#### **10.4.5 Scrap Metal**

Scrap metal shall be collected in separate containers designated as:

- Aluminum
- Copper and Copper Wire
- Mixed Metal (including steel)

Call extension 46339 for delivery and pickup of containers, or questions concerning scrap metal.

#### **10.4.6 Batteries**

Batteries are subject to Resource Conservation and Recovery Act (RCRA) and Environmental Protection Agency (EPA) hazardous waste management regulations. LaRC has a recycling program that meets RCRA and EPA regulations for batteries.

Trash disposal is prohibited for batteries. See Section 5.6 of the Hazardous Waste Management Chapter for information regarding management of batteries.

For pickups of batteries, waste generators or FEC's should contact the EMO at extension 5-DRUM.

#### **10.4.7 Fluorescent Light Bulbs**

Fluorescent light bulbs are subject to Resource Conservation and Recovery Act (RCRA) and Environmental Protection Agency (EPA) hazardous waste management regulations. LaRC has a recycling program that meets RCRA and EPA regulations for fluorescent light bulbs.

Trash disposal is prohibited for all fluorescent light bulbs. For information regarding management of fluorescent light bulbs, see Section 5.6 of the Hazardous Waste Management Chapter. For pickup of fluorescent light bulbs, waste generators or FEC's may contact the EMO at extension 5-DRUM.

#### 10.4.8 Aerosol or Paint Spray Cans

Aerosol or paint spray cans are subject to Resource Conservation and Recovery Act (RCRA) and Environmental Protection Agency (EPA) hazardous waste management regulations. LaRC has a recycling program that meets RCRA and EPA regulations for aerosol/paint spray cans.

Trash disposal is prohibited for all aerosols or paint spray cans. For information regarding management of all aerosol or paint spray cans, see Section 5.6 of the Hazardous Waste Management Chapter. For pickup of all aerosol or paint spray cans, waste generators or FEC's may contact the EMO at extension 5-DRUM.

#### 10.4.9 Oil

Many LaRC facilities and personnel generate waste oil in their daily operations. As a generator of waste oil, LaRC is subject to the RCRA requirements in 40 CFR part 279. These requirements apply to facilities or persons that generate, store, transport, market, burn, and recycle "used oil." All LaRC facility personnel or contractors who use oil are required to manage used oil according to the following guidelines:

- Request a labeled accumulation container/drum from the EMO. **NOTE: REUSE OF PRODUCT DRUMS IS PROHIBITED.** See Section 5.5.
- Ensure that oil accumulation containers/drums are maintained in good condition and are non-leaking.
- Facilities that store more than 220 gallons (4 x 55-gallon drums) of used oil outside must post a spill plan at each storage site.
- Do not mix used oil with solids, solvents or other waste unless absolutely necessary (i.e. spill cleanup).
- Notify the EMO at extension 44232 in the event of a large spill.
- For used oil pickup, follow the procedures outlined in Section 5.5, "Waste Management and Disposal Procedures."

The generator may call the EMO at extension 5-DRUM to request:

- Used oil pickup
- Accumulation container issue
- Blank waste disposal forms
- Used oil management procedures and information.

## **10.5 NON-HAZARDOUS SOLID WASTE MANAGEMENT**

### **10.5.1 Background**

The Resource Conservation and Recovery Act (RCRA) provides for the regulation of non-hazardous solid waste. While hazardous waste management receives most national emphasis, proper management of non-hazardous solid waste is still important. Hazardous waste management is discussed in Chapter 5. This section focuses on non-hazardous solid waste that is discarded in a sanitary landfill.

### **10.5.2 Requirements**

RCRA provides for regulation of solid waste in 40 CFR 240-246. The Hazardous and Solid Waste Amendments (HSWA) to RCRA enable regulation, including permitting, of Solid Waste Management Units (SWMU's) particularly where any possibility exists that such units were used for hazardous waste disposal. The RCRA regulations also provide for various means of recovering value from waste. Wastes may be recycled, reclaimed, used as a fuel supplement, or sold for profit. Executive Order 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition" requires all Federal agencies to recycle.

### **10.5.3 Trash Disposal**

Items that are discarded in a sanitary landfill should not pose a potential hazard to human health or the environment. The following items are some examples of what is allowed in a sanitary landfill:

- Garbage that is discarded material, composed of animal, vegetable, or other organic material.
- Trash (rubbish) that is combustible and noncombustible materials.
- Refuse that is waste products having the character of solids rather than liquids, and composed of materials such as trash, garbage, and litter.

The following items are prohibited from being discarded in a sanitary landfill:

- Hazardous Material - A substance or material that has been designated under 49 CFR 171 and 173. (see Chapter 5)
- Recyclable Items - A material that is being recycled on the Center. (see Section 10.4)
- Pesticide containers that have not been tripled rinsed and crushed.
- Excess material and equipment. (Contact the Office of Logistic Management at extension 43570).

#### **10.5.4 Facility Environmental Coordinators (FEC's)**

- Ensure facility personnel and contractors follow established non-hazardous waste management procedures.
- Educate facility employees about the non-hazardous solid waste management program or contact the EMO at extension 43500 to arrange for specific training.

#### **10.5.5 Center Employees and Contractors**

- Ensure that non-hazardous solid wastes are properly segregated and disposed of in accordance with the procedures contained in this Chapter.

**Chapter 11****11. WETLANDS****11.1 GENERAL**

Wetlands are defined as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

NASA LaRC is located in an area of low topographic relief surrounded by a shallow estuarine environment. The predominant wetland areas in the vicinity of LaRC are the tidal marsh wetlands associated with Brick Kiln Creek and Tabbs Creek.

**11.2 REQUIREMENTS**

Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers (ACOE) for all activities involving dredging or filling of U.S. waters, including wetlands. The EPA is the permitting authority and the U.S. Fish and Wildlife Service (USFWS) is a reviewing agency.

Executive Order 11990 requires each Federal agency to “take action to minimize the destruction, loss, or degradation of wetlands, unless there is no practicable alternative, and then the proposed action must include all practicable measures to minimize harm to wetlands.” Federal agencies must provide an opportunity for early public review of any plans or proposals for new construction in wetlands.

NASA regulations on wetlands management specified in 14 CFR 1216.2, require NASA Centers to include wetland protection in their master planning activities and consult with the ACOE, USFWS and FEMA.

The Virginia Wetlands Act (Chapter 13, Title 28.2-1300 through 28.2-1320) requires a permit from the Virginia Marine Resources Commission (VMRC) for any activity that would use or develop a tidal wetland.

**11.3 RESPONSIBILITIES****11.3.1 Environmental Management Office (EMO)**

- Maintain an accurate inventory of all Center wetlands, including maps and appropriate descriptions.
- Validate the need for permit applications.
- Initiate all wetland permit applications.
- Maintain copies of all existing wetlands permits.
- Coordinate with Capital Investment Planning Office for inclusion of wetland inventories into the Center Master Plan.

### **11.3.2 Facility and Equipment Support Services (FESS)**

- Review all proposed projects to determine activities in wetlands.
- Complete an environmental permit checklist and environmental analysis checklist for each proposed action. The checklists can be found in Chapter 7, Figure 7-1 and Chapter 2, Figure 2-2, respectively.
- Coordinate with the EMO for wetland permit applications.

### **11.3.3 Research and Technology (R&T) Competency Areas, Program Offices, Agency Functions, and Business Management Offices Initiating Projects**

- Personnel initiating projects shall coordinate proposed actions affecting wetlands with the EMO prior to project development.

### **11.3.4 Capital Investment Planning Office**

- Provide information for permit applications as required.



## Chapter 12

### 12. ENDANGERED AND THREATENED WILDLIFE AND PLANTS

#### 12.1 GENERAL

Many species of terrestrial wildlife have become rare or endangered within the Virginia peninsula due to continuing intensive development. Of major concern are the reptiles and amphibians that are unable to immigrate to undisturbed areas because of the topographic nature of the area, a peninsula, and their limited mobility.

#### 12.2 REQUIREMENTS

The Endangered Species Act of 1973 (16 U.S.C. 1531 through 1543) was enacted "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species." The Act states "all Federal departments and agencies shall seek to conserve endangered species and threatened species and utilize their authorities in furtherance of this Act." In addition to the Endangered Species Act of 1973, 50 CFR 17.11-12, implemented in 1983, addresses endangered and threatened wildlife and plants and provides a listing by name.

#### 12.3 ENDANGERED AND THREATENED SPECIES IN OR NEAR NASA LaRC

Old Dominion University (ODU) conducted fish, wildlife, and plant surveys facility-wide in 1995. The general findings are included below. A more detailed listing of the endangered and threatened species at NASA LaRC can be found in Chapter 6 of the Environmental Resource Document which is available by calling the Environmental Management Office (EMO) at extension 43500. The ODU study is also available through the EMO.

##### 12.3.1 Reptiles and Amphibians

Sixteen species of reptiles and amphibians were identified from NASA LaRC and 19 additional species should occur in the area, but were not encountered during the study. One reptile, the canebrake rattlesnake (*Crotalus horridus atricaudatus*) is listed by the State as an endangered species. The Federal Government lists the Kemp's Ridley sea turtle as a Federal endangered species. A third species, the Eastern glass lizard (*Ophisaurus ventralis*), is listed on the State list as a threatened species. In addition, three northern diamondback terrapins (*Malaclemmys terrapin terrapin*), a Federal species of concern, were captured, identified, and released (ODU, 1995).

##### 12.3.2 Mammals

Fourteen species of mammals were encountered at NASA LaRC during the ODU survey, and 12 additional species are expected to occur. None of these mammals are listed as threatened or endangered; however, three of the species found to inhabit NASA LaRC are listed as species of special concern by the Commonwealth of Virginia--the river otter (*Lutra canadensis*), the marsh rabbit (*Sylvilagus palustris*), and the small star-nosed mole (*Condylura cristata parva*).

##### 12.3.3 Birds

A total of 118 species of birds were observed at NASA LaRC during the survey. Of these, 7 are listed as threatened or endangered by the State or Federal government and 17 more are listed

as species of special concern in the Commonwealth of Virginia. The bald eagle (*Haliaeetus leucocephalus*), gull-billed tern (*Sterna nilotica*), and the Henslow's sparrow (*Ammodramus henslowii*) were determined to be transient migrants who use the NASA LaRC facility solely as a foraging stop. The northern harrier (*Circus cyaneus*), brown creeper (*Certhias americana*), winter wren (*Troglodytes troglodytes*), hermit thrush (*Catharus guttatus*), and the purple finch (*Carpodacus purpureus*) have the potential to nest at NASA LaRC, though currently none of them do. In addition, the brown pelican (*Pelicanus occidentalis*), least tern (*Sterna antillarum*), and great egret (*Ardea alba egretta*) are unlikely to nest at NASA LaRC due to lack of suitable nesting habitat.

#### **12.3.4 Finfish**

Thirty-three finfish species were collected at NASA LaRC during the ODU study. All species were common to the lower Chesapeake Bay and its tributaries. No endangered, threatened, or special concern species inhabit or use the NASA LaRC community.

#### **12.3.5 Plants**

No plants listed as threatened or endangered were found in any of the habitat types at NASA LaRC.

### **12.4 RESPONSIBILITIES**

The LaRC Environmental Management Office shall monitor updates and/or changes to endangered and threatened wildlife and plant listings to determine if LaRC is impacted. Findings will be updated in the LaRC Environmental Resources Document that is available by contacting the EMO at extension 43500.

**Continue to Next Section**